IN THE SPECIFICATION:

Please replace the paragraph beginning at page 18, line 1 with the following rewritten paragraph:

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FIG. 13 is a schematic illustration of a method in which the occupancy state of a seat of a vehicle is determined using a combination neural network in accordance with the invention.

FIG. 14 is a schematic illustration of a method in which the identification and position of the occupant is determined using a combination neural network in accordance with the invention.

Please replace the paragraph beginning at page 18, line 11 with the following rewritten paragraph:

A2 Cont.

FIG. 17 is a schematic illustration of a method in which the occupancy state of a seat of a vehicle is determined using a combination neural network in accordance with the invention, in particular, an ensemble arrangement of neural networks.

FIG. 18 is a database of data sets for use in training of a neural network in accordance with the invention.

FIG. 19 is a categorization chart for use in a training set collection matrix in accordance with the invention.

FIGS. 20, 21 and 22 are charts of infant seats, child seats and booster seats showing attributes of the seats and a designation of their use in the training database, validation database or independent database in an exemplifying embodiment of the invention.

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~~FIG. 23 is a chart showing different vehicle configurations for use in training of combination~~ neural network in accordance with the invention.

FIGS. 24A-24F show a ~~training~~ set collection matrix for training a neural network in accordance ~~with the invention~~.

FIG. 25 shows an independent test set collection matrix for testing a neural network in accordance with the invention.

FIG. 26 is a table of characteristics of the data sets used in the invention.

FIG. 27 is a table of the distribution of the main training subjects of the training data set.

FIG. 28 is a table of the distribution of the types of child seats in the training data set.

FIG. 29 is a table of the distribution of environmental conditions in the training data set.

FIG. 30 is a table of the distribution of the validation data set.

FIG. 31 is a table of the distribution of human subjects in the validation data set.

FIG. 32 is a table of the distribution of child seats in the validation data set.

FIG. 33 is a table of the distribution of environmental conditions in the validation data set.

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FIG. 34 is a table of the inputs from ultrasonic transducers.

FIG. 35 is a table of the baseline network performance.

FIG. 36 is a table of the performance per occupancy subset.

FIG. 37 is a tale of the performance per environmental conditions subset.

FIG. 38 is a chart of four typical raw signals which are combined to constitute a vector.

FIG. 39 is a table of the results of the normalization study.

FIG. 40 is a table of the results of the low threshold filter study.

Please replace the paragraph beginning at page 20, line 6 with the following rewritten paragraph:

In addition to a variety of seating states for objects in the passenger compartment, the trial database will also include environmental effects such as thermal gradients caused by heat lamps and the operation of the air conditioner and heater. A sample of such a matrix is presented in FIGS. 24A-24F, with some of the variables and objects used in the matrix being designated or described in FIGS. 18-23. After the neural network has been trained on the trial database, the trial database will be scanned for vectors that yield erroneous results (which would likely be considered bad data). A study of those vectors along with vectors from associated in time cases are compared with the photographs to determine whether there is erroneous data present. If so, an attempt is made to determine the cause of the erroneous data. If the cause can be found, for example if a voltage spike on the power line corrupted the data, then the vector will be removed from the database and an attempt is made to correct the data collection process so as to remove such disturbances.

Please replace the paragraph beginning at page 20, line 24 with the following rewritten paragraph:

The next set of data to be collected is the training database. This will be the largest database initially collected and will cover such setups as listed, for example, in FIGS. 24A-24F. The training database, which may contain 500,000 or more vectors, will be used to begin training of the neural network. While this is taking place additional data will be collected according to FIGS. 20-22 and 25 of the independent and validation databases. The training database has been selected so that it uniformly covers all seated states that are known to be likely to occur in the vehicle. The independent database may be similar in makeup to the training database or it may evolve to more closely conform to the occupancy state distribution of the validation database. During the neural network training, the independent database is used to check the accuracy of the neural network and to reject a candidate neural network design if its accuracy, measured against the independent database, is less than that of a previous network architecture.

Please replace the paragraph beginning at page 37, line 28 with the following rewritten paragraph:

A5

The process for adapting an ultrasonic system to a vehicle will now be described. A more detailed list of steps is provided in Appendix 2. Although the pure ultrasonic system is described here, a similar or analogous set of steps applies when other technologies such as weight and optical or other electromagnetic wave systems such as capacitance and field monitoring systems are used. This description is thus provided to be exemplary and not limiting.

Please delete the charts and tables on pages 52-62.

Please replace the phrase beginning at page 63, line 1 with the following rewritten phrase:

--Appendix 1--

Please delete the tables on pages 64-70 and the chart on page 69.

Please replace the paragraph beginning at page 64, line 1 with the following rewritten paragraph:

A6

FIG. 26 shows the main characteristics of these three data sets, as collected for the vehicle. Three numbers characterize the sets. The number of configurations characterizes how many different subjects and objects were used. The number of setups is the product of the number of configurations and the number of vehicle interior variations (seat position and recline, roof and window state, etc.) performed for each configuration. The total number of vectors is then made up of the product of the number of setups and the number of patterns collected while the subject or object moves within the passenger volume.

Please replace the paragraph beginning at page 64, line 12 with the following rewritten paragraph:

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The training data set can be split up in various ways into subsets that show the distribution of the data. FIG. 27 shows the distribution of the training set amongst three classes of passenger seat occupancy: Empty Seat, Human Occupant, and Child Seat. All human occupants were adults of various sizes. No children were part of the training data set other then those seated in Forward Facing Child Seats. FIG. 28 shows a further breakup of the Child Seats into Forward Facing Child Seats, Rearward Facing Child Seats, Rearward Facing Infant Seats, and out-of-position Forward Facing Child Seats. FIG. 29 shows a different type of distribution; one based on the environmental conditions inside the vehicle.

Please replace the paragraph beginning at page 65, line 12 with the following rewritten paragraph:

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The distribution of the validation data set into its main subsets is shown in FIG. 30. This distribution is close to that of the training data set. However, the human occupants comprised both children (12% of total) as well as adults (27% of total). FIG. 31 shows the distribution of human subjects. Contrary to the training and independent test data sets, data was collected on children ages 3 and 6 that were *not* seated in a child restraint of any kind. FIG. 32 shows the distribution of the child seats used. On the other hand, no data was collected on Forward Facing Child Seats that were out-of-position. The child and infant seats used in this data set are different from those used in the training and independent test data sets. The validation data was collected with varying environmental conditions as shown in FIG. 33.

Please replace the paragraph beginning at page 67, line 1 with the following rewritten paragraph:

A9

The baseline network consisted of a four layer back-propagation network with 117 input layer nodes, 20 and 7 nodes respectively in the two hidden layers, and 1 output layer node. The input layer is made up of inputs from four ultrasonic transducers. These were located in the vehicle on the rear quarter panel (A), the A-pillar (B), and the over-head console (C, H). FIG. 34 shows the number of points, taken from each of these channels that make up one vector.

Please replace the paragraph beginning at page 67, line 12 with the following rewritten paragraph:

A10

The network was trained using the above-described training and independent test data sets. An optimum (against the independent test set) was found after 3,675,000 training cycles. Each training cycle uses 30 vectors (known as the epoch), randomly chosen from the 650,000 available training set vectors. FIG. 35 shows the performance of the baseline network.

Please replace the paragraph beginning at page 67, line 17 with the following rewritten paragraph:

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The network performance has been further analyzed by investigating the success rates against subsets of the independent test set. The success rate against the airbag enable conditions at 94.6% is virtually equal to that against the airbag disable conditions at 94.4%. FIG. 36 shows the success rates for the various occupancy subsets. FIG. 37 shows the success rates for the environmental conditions subsets. Although the distribution of this data was not entirely balanced throughout the matrix, it can be concluded that the system performance is not significantly degraded by heat sources.

Please replace the paragraph beginning at page 68, line 11 with the following rewritten paragraph:

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